

abandoned. There is much danger of new weeds being introduced with the seeds or roots of plants received upon the farm from the Patent Office and elsewhere. Those weeds which give the most trouble are barn grass, rag-weed, purslane and couch or witch grass. The number of species in the College herbarium is 316, representing 66 orders. This does not include several species undetermined, nor the Compositæ, Salices, Juncaceæ, Cyperaceæ, and Gramineæ, and only a portion of the higher Cryptogams. The actual number of species observed, aside from the families mentioned, is 455.

Orono, Maine, 1872.

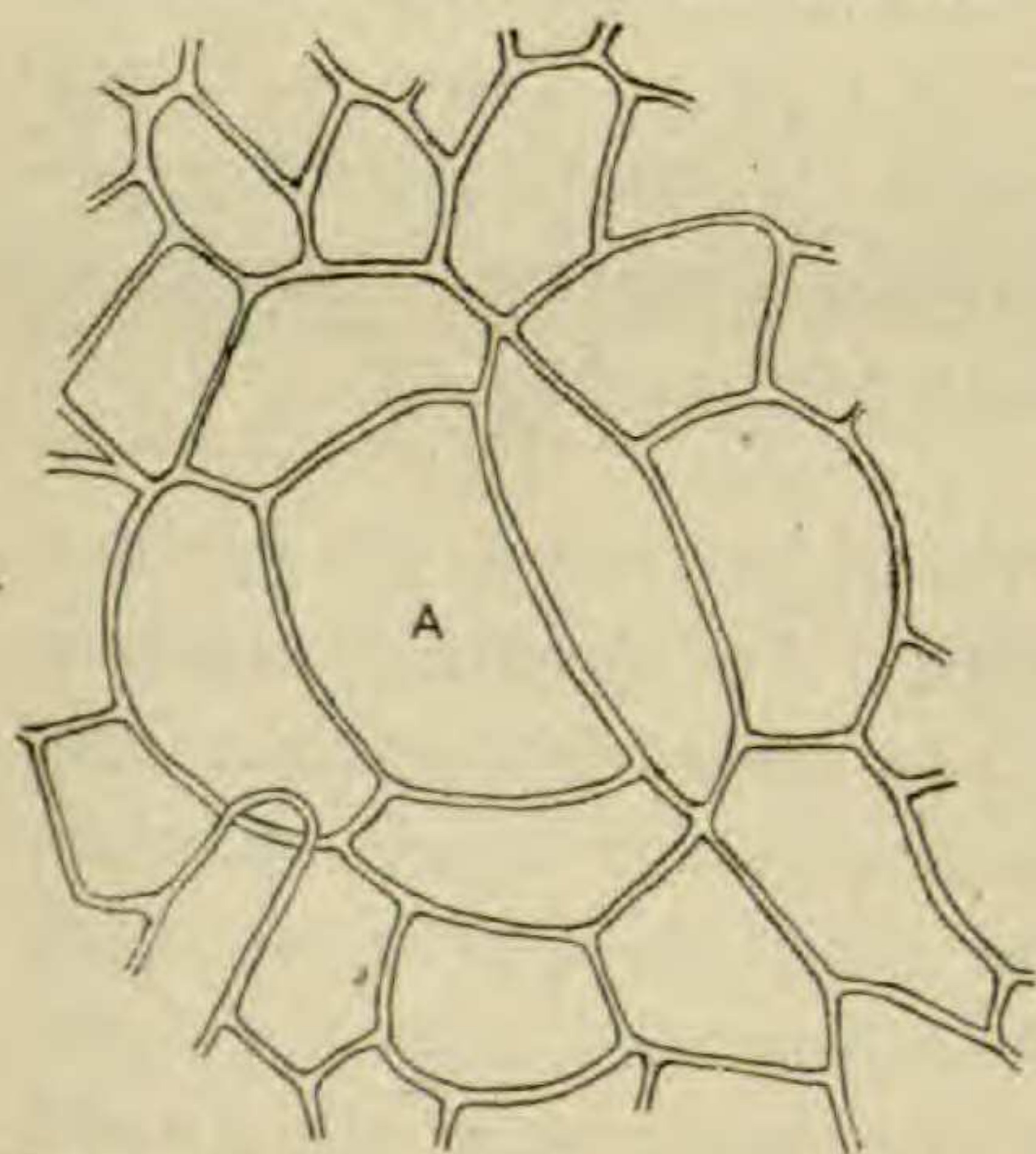
BRIEFER ARTICLES.

Notes on the pollination of Helianthus.—Having had growing in my room for some months a specimen of *Helianthus annuus*, I have observed its habits closely to see if I could find something new or interesting. Nothing out of the ordinary was observed until it came to bloom, which it did in March, bearing a single head. During this period I observed it very closely, from the time of the opening of the first disk floret until the last had withered away. Most of the flowers behaved in the usual way, the style pushing out the pollen from the stamen tubes and cross-fertilization was insured by protandry. But in a number I noticed movements, to me quite new and interesting.

The styles in these cases appeared as usual and soon spread their tips for the reception of pollen. After standing in this way for about two days I was greatly surprised to see that they were being drawn back into the stamen tube. This they continued to do until they finally disappeared. Then the stems were forced to one side and from between the filaments were seen the bent styles slowly backing out, resembling very much the extraction of the plumule from the acorn in germination. This it continued to do until the entire style was withdrawn, leaving the stamens wilted and collapsed lying upon the limb of the corolla. Then the style assumed an erect position, spread its tips and apparently stood waiting to receive pollen. This entire act was accomplished in about a dozen cases; failed to more than draw back into the stamen tube in about as many more; and in two the style was broken in attempting to escape. All this was observed only in the outer circle of tubular flowers, which preceded the others by about four days.

The reason for this I attribute to the attempt of the flowers to secure pollination. The plant was kept in a room, and while the flowers were few in number there was no chance for the transfer of pollen, as was easily the case when they became more numerous and crowded. The stamens appeared to wilt in about two days after their pollen had been thrust out by the styles and had they, as was observed in later cases, drawn the styles down into the tube with them, then the object of their living would have been defeated. In two cases I transferred pollen to the stigmas and no movement of the styles was noticed independent of the stamens, but after a time both styles and stamens were drawn down within the tube. My conclusion is that undoubtedly the first cases failed of fertilization and the withdrawing of the styles and the subsequent unfolding of the style branches was a plan to longer present their stigmas for the reception of pollen.—WALTER H. EVANS, *Herbarium Eli Lilly & Co., Indianapolis.*

An abnormal water-pore.—The accompanying figure illustrates a curious water-pore found by Mr. E. L. Hicks, a student in the botanical laboratory of the University of Wisconsin, while examining these



structures on the leaves of *Tropæolum majus*. The four guard cells bound a somewhat trapezoidal pore, *A*. The whole apparatus reminds one strikingly of a stoma of *Marchantia polymorpha*. That it was a functionally active pore was shown by the distinct incrustation of the guard-cells with mineral salts.—C. R. B.

A new grass: *Melica? multinervosa*.—Culms from a strong creeping rhizoma, about 3 ft. high, somewhat thickened at the base, erect, smooth, frequently geniculate below, the lower nodes hairy: leaves four or five, narrow, rather rigid, 6 to 12 in. long, becoming involute; lower sheaths much longer than the internodes and open above, upper sheaths shorter; ligule a prominent ring of hairs: panicle erect, 6 inches long, the branches single, the lower ones 3 inches long, flowering above the middle with 3 to 6 single, alternate, short-pedicelled, approximate spikelets, the upper branches gradually shorter, above nearly sessile, the lower branches spreading somewhat in flowering; rachis angular, scabrous, hairy in the main axils: spikelets spindle-shaped or linear-lanceolate, 6 to 9 lines long, 8 to 12-flowered, slightly compressed, the flowers imbricated, purple on the margins; empty glumes somewhat unequal, the lower 2 lines long, 1- or faintly 3-nerved, the upper 7-nerved, both